

Tenth Annual Symposium

RISE

**Research Insights in
Semiarid Ecosystems**

Recent research at the USDA-ARS Walnut Gulch Experimental Watershed (WGEW) and the University of Arizona Santa Rita Experimental Range (SRER)



1963
natural rainfall runoff plots

2013
simulated rainfall runoff plots

10 th RISE Symposium (Research Insights in Semiarid Ecosystems) Saturday, 12 October 2013		
Marley Building, Room 230		
8:30-9:00	Registration	
9:00-9:20	Mitch McClaran and Shirley Papuga UA SNRE	RISE Welcome Introduction to the Symposium: including Updates on NEON at Santa Rita
9:20-9:40	Alyssa Rosemartin NPN	Phenology as an integrator across scales, audiences and approaches to science.
9:40-10:00	Benjamin L. Ruddell ASU	Ecophysiological Process Networks and Phenology: Applying NEON and NPN Data Products
10:00-10:15	Mark Heitlinger UA SRER	Local Community Involvement at Santa Rita Experimental Range
10:15-10:45	USDA ARS SWRC (in absentia)	Videos: Southwest Watershed Research Center 60 th Anniversary, and Upscaling from WGEW to Semiarid Regions around the World
10:45-11:15	Poster introductions	Poster abstracts presented by poster authors
11:15-1:00	Poster Session	Authors will be with their posters in the hall outside the conference room
12:00-1:00	Lunch w/ Posters	<i>Provided at the meeting; included in RISE registration fee</i>
1:00-1:20	Lisa Haynes UA SNRE WILD CAT	Jaguar Survey and Monitoring in the Southwestern United States
1:20-1:40	Russ Monson UA SNRE	Toward Defining a New Scale of Ecological Interactions. The North American Monsoon Macrosystem
1:40-2:00	Jeff Fehmi UA SNRE	Revegetation Research Results from Southern Arizona
2:00-2:20	Peter Gierlach (Petey Mesquitey) KXCI Radio	Field Notes from the Borderlands of Southeastern Arizona.
2:20-2:30	Poster Contest Awards	
2:30-2:45	Discussion	All speakers and poster authors will be in attendance

RISE Organizing Committee

- Erik Hamerlynch
- Mitch McClaran
- Susan Moran
- Shirley Papuga

Logistics

- Bathrooms
- Tierra Seca students
- Lunch with Posters
- Talks and posters available at RISE web site

<http://www.tucson.ars.ag.gov/rise/index.htm>

RISE Posters

Student Contest: Undergraduate and Graduate

Benefactor: Malcolm McGregor

P1	Xin Zhang	<i>Impact of Prolonged Drought on Rainfall Use Efficiency across China in the Early 21st Century</i>
P2*	Yee Huang	<i>Localized Precipitation, Temperature, and Vegetation Responses in Natural and Urban Areas to Regional Drought</i>
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P5*	Wolfgang Knudson	<i>Is There a Correlation between Storm Origination and Maximum Saturation Events in the Walnut Gulch Experimental Watershed?</i>
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P8	Trenton Franz	<i>Understanding the Spatiotemporal Distribution of Soil Moisture at the Santa Rita Experimental Range</i>
P9*	Cianna Logie	<i>Determining a New Dryland Decomposition Input Term: Sediment Redistribution to Litter Surfaces during Fluvial Event Simulation</i>
P10*	Eva Levi	<i>Soil Deposition and UV Radiation Influence Litter Decomposition in a Shrub-Invaded Dryland Ecosystem</i>
P11*	Martha Gebhardt	<i>Soil Biotic Indicators for Improving Native Plant Establishment in Disturbed Southwestern Grasslands</i>
P12*	Coleen O'Shea	<i>Sonoran Desert Soil Microbial Community Responses to Vegetation Change and Grazing</i>
P13+	Amy Kwiecien	<i>Mesquite and Cactus Abundance on a Grazed and Protected Sonoran Desert Grassland Site</i>
P14*	Daphne Szutu	<i>The Impact of Grazing Regimes on Event-Scale Rainfall-Runoff Relationships: A Case Study at Santa Rita Experimental Range, Arizona</i>

P15	Amber Dalke	<i>A Recalibration of the Percent Ungrazed Plant Method to Estimate Utilization in Semi-Desert Grassland Invaded by Lovegrass</i>
P16	Guillermo Ponce-Campos	<i>Evaluating Grazing and Climate Effects on Rangeland Cover and Production with MODIS Products</i>
P17	Andrea Mathias	<i>Modeling the Climate and Hydrological Controls of the Expansion of an Invasive Grass over Southern Arizona</i>
P18	Daniel Wilcox	<i>Understory Growth Dynamics Following High Severity Burn in a Mixed-Conifer Ecosystem</i>
P19	Bhaskar Mitra	<i>Are Allometric Relationships for Mixed-Conifer Species Generalizable? Implications for Upscaling in Sap Flow Applications</i>
P20	Ami Kidder	<i>Towards Understanding the Ecohydrologic Controls on the Phenology of Pima Pineapple Cactus</i>
P21*	Kelsey Yule	<i>Reproductive Biology of a Mutualist-Vectored Parasitic Plant Differs with Host Species</i>
P22*	Matthew Nielsen	<i>Interactions between Behavioral Thermoregulation and Color Change in Pipevine Swallowtail Caterpillars (<i>Battus philenor</i>)</i>
P23	Aysan Abdollahzadeh	<i>Comparing Solar Radiation on Domed Roofs and Flat Roofs in Arid Regions</i>
P24	Anahi Ocampo-Melgar	<i>Connecting Knowledge for Integrated Assessment of Land Management Actions in the San Simon Watershed</i>
P25*	Dave Chan	<i>Linking Land Cover to Ecosystem Services</i>
P26	Ian Shiach	<i>The Potential for Hybrid Poplar as a Biofuel in Southern Arizona</i>
P27	Maria Pilar Cendrero Mateo	<i>Comparison between Active and Passive Chlorophyll Fluorescence Measurements at Leaf Level</i>

News from the Santa Rita Experimental Range

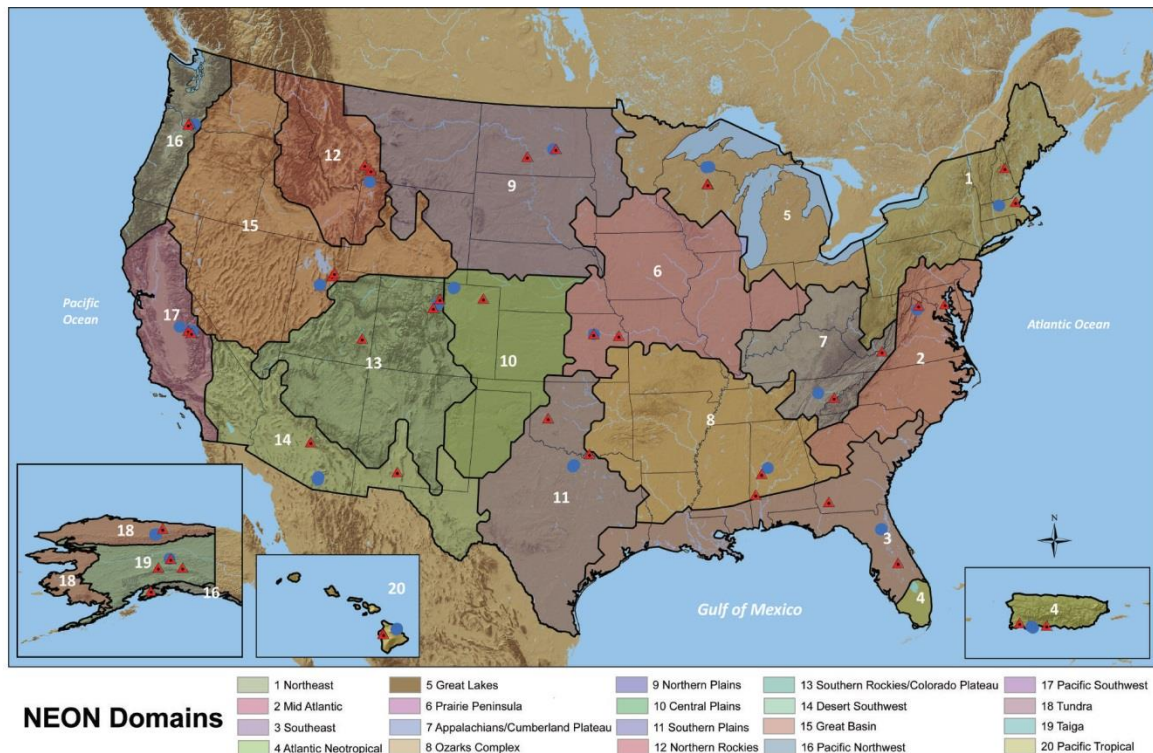
- Very Dry Winter and Spotty Dry Summer
- NEON is here
 - Breaking Ground on Fundamental Instrument Unit
 - Selecting locations for Fundamental Sentinel Units
 - Hiring a Domain Field Operations Manager





National Ecological Observatory Network

NEON: a multi-disciplinary, continental-scale observatory for measuring, understanding, and forecasting ecosystem response to environmental change.



GOALS

- Measure drivers and responses for 30 y (**multi-discipline**)
- Use consistent and coordinated techniques
- Meter to continental scales with extrapolation (**multi-scale**)
- Accessible data and data products

Multi-Discipline and Multi-Scale Measures

	Scale (ha)	Drivers/ Response	Variables
<i>Fundamental Instrument Unit (FIU)</i> Towers and Sensors	$10^0 - 10^3$	Drivers and Responses	Drivers: Temp, Humidity, Wind, PPT, Insolation, CO ₂ , O ₃ , NO _x Responses: fluxes of C, H ₂ O, energy
<i>Fundamental Sentinel Unit (FSU)</i> Organisms	$10^{-4} - 10^1$	Largely response	Field: species abundance, diversity, phenology Lab: chemistry, isotopes, genetics/genomics

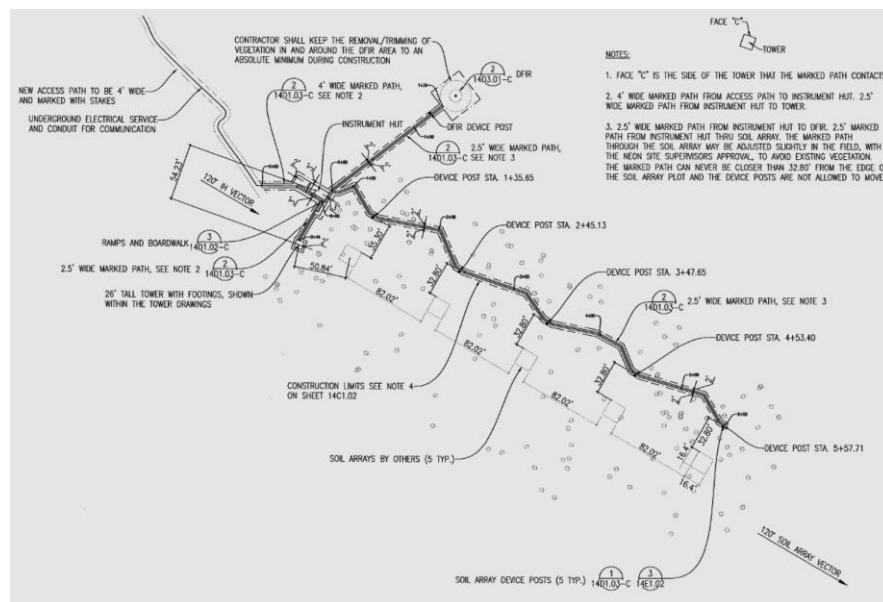
Construction	Sensor Installation	Sensor Data Stream	Organism protocols	Site Complete & Data Available
15 complete 3 underway 42 to go	3 underway 57 to go	 60 to go	 60 to go	 60 to go

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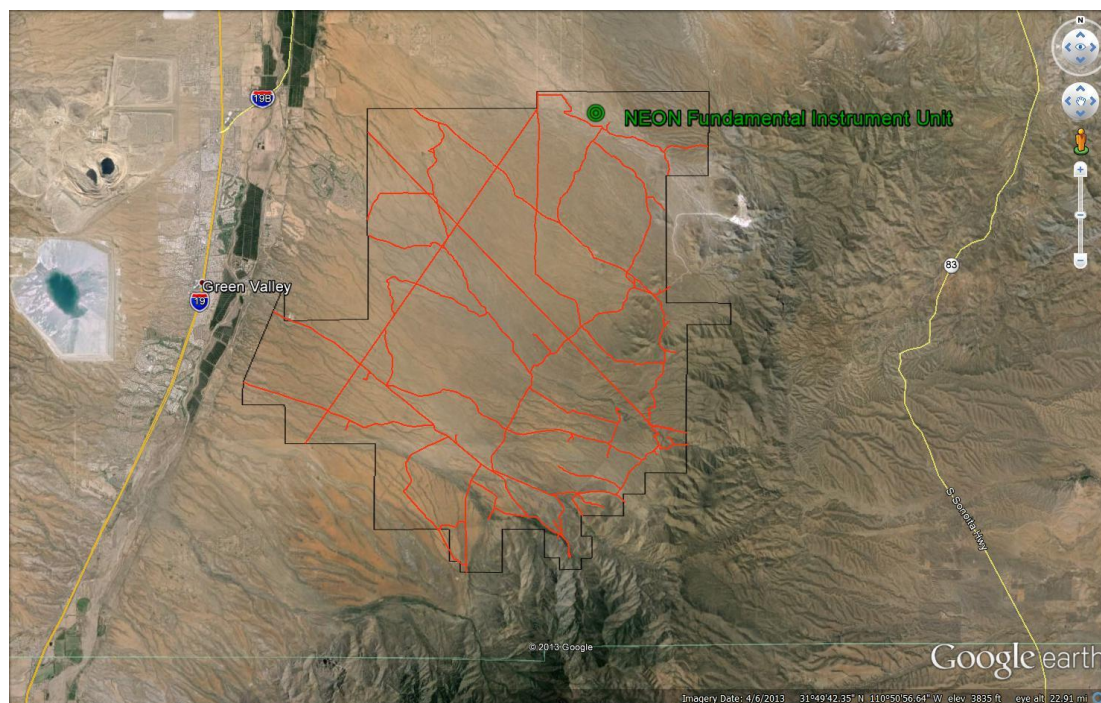
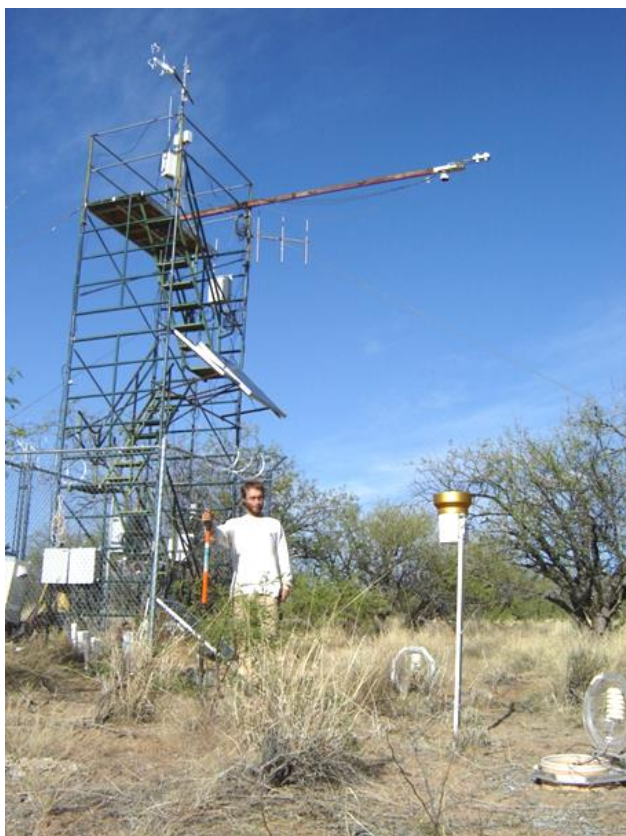


40 m array of soil-based sensors



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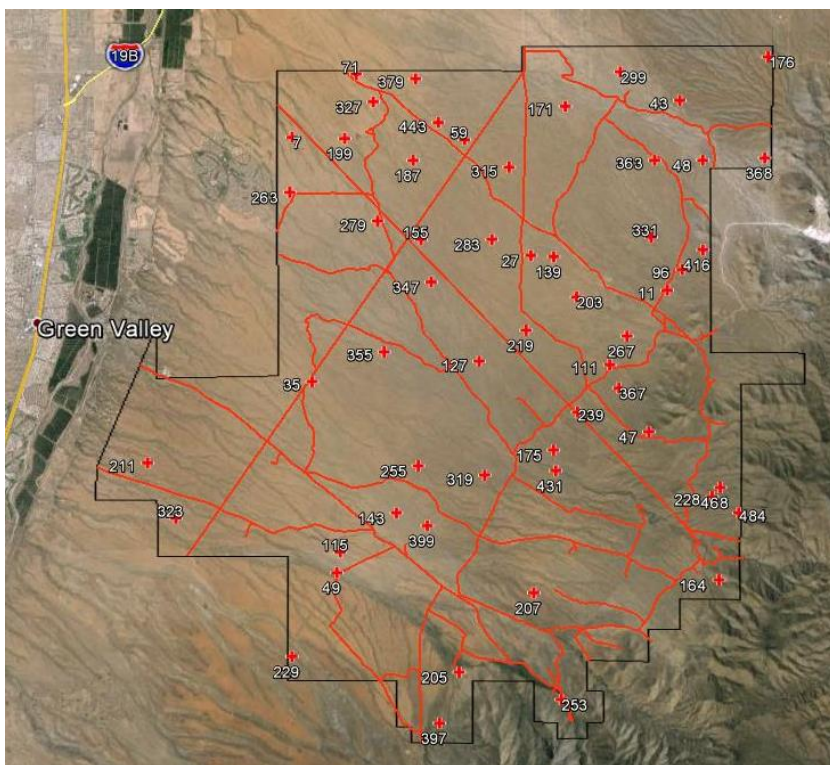


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Site selection in Progress:

Will be vetted on srer@cals.arizona.edu



40 -Base plots (40 x 40 m)

- Beetles, biogeochemistry, microbes, mosquitoes, plant diversity and productivity

12 -Bird plots (500 x 500 m)

15 -Small Mammal Plots (100 x 100 m)

20 -Tick Transect Loop (40 x 40 m)



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Field Operations Manager – Desert Southwest - Domain 14

Overview

The National Ecological Observatory Network (NEON) is a \$430 million dollar observatory project dedicated to understanding how changes in climate, land use and invasive species impact ecology. For the next three decades NEON will collect a comprehensive range of ecological data on a continental scale across 20 eco-climatic domains representing US ecosystems. NEON will use cutting edge technology including an airborne observation platform that will capture images of regional landscapes and vegetation; mobile, re-locatable, and fixed data collection sites with automated ground sensors to monitor soil and atmosphere; and trained field crews who will observe and sample populations of diverse organisms and collect soil and water data. A leading edge cyber-infrastructure will calibrate, store and publish this information. The Observatory will grow to 300+ personnel and will be the first of its kind designed to detect and enable forecasting of ecological change at continental scales.

Summary:

The NEON Field Operations Manager is responsible for managing all personnel and activities coordinated from the assigned field office. Field office activities include (1) preventative and corrective maintenance of scientific instrumentation, field infrastructure and equipment, office and laboratory equipment, (2) field observations, (3) specimen collection, handling, preparation and shipment according to NEON scientific protocols. Personnel management includes (1) selecting, (2) training, (3) scheduling, and (4) performance management for 5-10 regular full-time field technicians and 20-30 seasonal field technicians according to NEON, Inc. Policies and Procedures. Must have permanent authorization for US employment.

Location:

The Domain 14 Field Operations Manager's primary work location is near Tucson, AZ. This position supports sites in the Desert Southwest Domain. Desert Southwest sites are located at Santa Rita Experimental Range near Tucson, Jornada LTER near Las Cruces, NM and near Phoenix, AZ. The Desert Southwest Domain includes western Texas, southern Arizona, southern New Mexico, southern Nevada, and Southern California

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